

*Report on some Fishes received chiefly from the Sitang River and its Tributary Streams, Tenasserim Provinces.—By ED. BLYTH.*

A Report upon fishes which I drew up some months ago has gradually attained to such a length that it may be conveniently divided; and I shall therefore here confine attention almost entirely to fluviatile species, mostly collected by the late Major Berdmore in the Sitang river and its tributaries, with a few notices of new or little known species from the Gangetic streams and their outlets; reserving an extensive collection of marine fishes, collected principally at Port Blair, Andamán Islands, for a future occasion.

Fam. *Apogonidæ.*

AMBASSIS NOTATUS, nobis, *n. s.* Nearly similar to A. LALA, (Buchanan Hamilton), in form, but as large as A. RANGA, (B. H.), the mouth proportionally larger than in the latter and opening more distinctly upwards. Diameter of the eye nearly half that of the head. Body scales minute, but conspicuously visible to the unassisted eye; and the lateral line distinctly traceable throughout. In this genus, the first true dorsal spine is minute and fixed, pointing forwards (as in various Scomberoids), and the second or first moveable spine is generally reckoned as the first. Counting the moveable species only, the dorsal and anal rays are—

*D.* 7—1-13.—*A.* 3-14.

The first moveable spine of the anterior dorsal fin is  $\frac{1}{4}$  the length of the second, and the third is a little shorter than the second. Of the anal spines, the first is but half the length of the second, which again is a little shorter than the third. Fins colourless. A silvery band on each flank, commencing from a large dusky humeral spot. Length  $2\frac{1}{2}$  in. Sitang river.

A. LALA, (B. H.), var. A number of specimens of this fish sent by Major Berdmore are of small size, not exceeding  $1\frac{1}{2}$  in. in length, and have the anterior dorsal fin infuscated and the posterior dorsal and anal fins margined with blackish, to an extent that I have never seen in Bengal specimens; but I can detect no difference in structure. Sitang river.

BOGODA INFUSCATA, nobis, *n. s.* A minute species (if adult),  $\frac{9}{16}$  in. long by  $1\frac{1}{8}$  in. deep *minus* the fins; with the tail much less forked than in B. NAMA, (B. H.), Bleeker; and of a dusky or infuscated hue, having silvery gill-covers and a greenish-silvery stripe on each side: fins paler than the body, with a blackish tinge on the anterior half of the first dorsal.

D. 10—1-10?—A. 3-8?

One specimen only, from the Mutla. Presented by Major W. S. Sherwill.

The following are the species of *Sciænidæ* which have occurred to me in Lower Bengal: this being an estuary group, of which several of the species ascend into fresh water.

SCIENOIDES, nobis, *n. g.* Certain Asiatic species are here brought together, which do not range well (as hitherto) either in SCIÆNA or OTOLITHUS, but they approach nearer to JOHNIUS, from which they indeed chiefly differ in the comparatively small size of the eye. The jaws are of equal length, with dentition as in JOHNIUS; and the anal spine is short and feeble.

1. SC. BIAURITUS; *Otolithus biauritus*, Cantor. Common about the mouths of the Ganges, and not unfrequently brought to the Calcutta bazars. I have an impression that, many years ago, I forwarded specimens of this fish to the India-house by the *M.S.* name *Sciæna elongata*.

2. SC. PAMA; *Bola pama*, B. H.: *Sciæna pama*, C. V.\* Exceedingly common, but I have never known it to exceed 2 ft. in length, and therefore believe that the examples “between four and five feet long” noticed by Buchanan Hamilton appertained to the preceding species, which is very similar in form of head, and moreover is unnoticed as a distinct species by Hamilton.

3. SC. HARDWICKII, nobis, *n. s.* A diminutive species, common at the mouths of the Gangetic rivers, which greatly resembles the

\* The so-called ‘Whiting’ of Calcutta tables. At Madras the SILLAGO ACUTA is eaten for ‘Whiting;’ and I consider the Bengal species, S. DOMINA, to resemble the flavour of true Whiting much more than does the SC. PAMA, or ‘Bola’ fish. S. ACUTA occurs at the Sandheads, but I have never seen this species in the Calcutta fish-bazars.

SCIÆNA LUCIDA, Richardson, figured in the *Zoology of the Voyage of H. M. S. 'Sulphur,'* and is therefore probably that cited as figured in one of the unpublished drawings of Gen. Hardwicke in the British Museum, No. 130; the SC. LUCIDA inhabiting the Chinese Seas. The eyes, however, are smaller than in SCIÆNOIDES LUCIDA, the teeth more developed, the medial caudal rays are prolonged into a lengthened filament (which, however, may be characteristic of youth), and the fore-part of the back is smooth and spineless. It has also many more rays to the second dorsal and fewer to the anal fins.

*D.* 9—1.43—*A.* 2.7.

Length to end of caudal filament under 2 in., in all hitherto examined. Colour bright silvery with white fins.

4. SC. (?) ASPER, nobis, *n. s.* Another small fish common at the mouths of the Gangetic rivers, with body and fins like the last, but the back less elevated, and the anal spine considerably more developed. Mouth large, opening obliquely upward; the teeth moderate or rather small. Head with many prickles or spinelets, more or less developed in different individuals. Eyes placed high, near the plane of the forehead, on which two slight ridges—one from above each eye—meet behind upon the occiput at a somewhat acute angle. Some have a mesial spinelet, pointing a little backward, on and above the moveable and protrusile portion of the upper jaw, and another directed forward a little behind it: other spinelets, again, are seen (or more readily felt) on a raised line posterior to the eye, another upon each side of the occiput, and there are spinelets likewise at the margin of the pre-opercule.

*D.* 9—1.28. *A.* 2.6.

Colour silvery, the head brilliant silvery in the recent fish, with more or less of a nigrescent wash on the dorsal and the caudal fins, and numerous very minute dark specks near the ridge of the back, which are likewise seen in SC. HARDWICKII. Length mostly under 3 in.

5. OTOLITHUS MACULATUS, Kuhl and von Hasselt (nec apud Cantor). This is clearly the species described by this name in the *Histoire des Poissons*, with numerous black spots on the caudal and

second dorsal. It is occasionally, though rarely, brought to the Calcutta fish-bazars.

6. *O. SUBMACULATUS*, nobis, *n. s.*: *O. maculatus* apud Cantor? Spots few in number and comparatively large, ranged chiefly in two subregular lines, one bordering the second dorsal and the other bordering the lateral line above, with a few spots also bordering the lateral line below,—about 24 in all on each side: no decided spots on the fins; but numerous dusky specks on the dorsals, caudal, and a few on the anal: a purple spot or patch and below it a yellow one on each gill-cover. Mouth opening more decidedly upwards than in the other, so that the large canine-like teeth of the lower jaw point directly backward when the mouth is closed.

*D.* 9—1.31.—*A.* 2-11.

Length 7 in. by  $1\frac{1}{2}$  in. in greatest depth of body. Two individuals only obtained in the bazar, within a few days of each other.

7. *O. BISPINOSUS*, Cuvier and Valenciennes. The fry common at the Sandheads, together with *SCIÆNOIDES HARDWICKII* and *SC. (?) ASPER*.

8. *JOHNIUS ANEI*, Bloch: *Bola coibor*, B. H. Common. Attains an enormous size, but the very large are seldom brought to the bazars.

9. *J. MACULATUS*, C. V.: *Sciæna maculata (?)*, Gray, Hardw. *Ill. Ind. Zool.* (represented as without spots below the lateral line!) Accords minutely with the description in the *Histoire des Poissons*; and Russell's figure (No. 123) assigned to the same must therefore be faulty, especially in the form of the head above the eye, if intended to represent the same species. Once only obtained; two specimens.

10. *J. CATALEUS (?)*, C. V. This also must be very faultily figured if Russell's pl. 116 is correctly assigned to it. It is not uncommon; and we have specimens from  $4\frac{1}{2}$  to 21 in. long. It is thoroughly distinct from No. 9 (at least the species are so to which I have assigned the names). *Kála Bola* of the natives here.

11. *J. CHAPTIS*; *Bola chaptis*, B. H. Common.

12. *J. SINA*, C. V. (Russell, No. 111). Rare.

13. *J. COITOR*; *Bola coitor*, B. H. Common.

14. *CORVINA CUJA*; *Bola cuja*, B. H. Common.

15. *LOBOTES ERATE*, C. V. Not rare. A particularly delicate fish for the table.

Of the foregoing fifteen species of *Sciænidæ*, twelve have been obtained in the Calcutta fish-bazars, and only five of them are noticed by Buchanan Hamilton, though he appears to have confounded *SCIÆNOIDES BIAURITUS* with *SC. PAMA*.

A remarkable little fish obtained in the Calcutta fish-bazars may be designated —

*URANOSCOPIUS ADHÆSIPINNIS*, nobis, *n. s.*: having the ventral fins well separated apart, but each being connected along its whole inner edge to the skin of the abdomen, forming apparently an adhesive disk. Another curious character consists in a duplicature of the skin within the upper angle of the gill-cover, forming a sort of tube communicating with the gills when the opercle is closed. The anterior dorsal consists of ten almost detached spines, of which the first (which is close to the occiput) is longest. The upper part of the head is ridged, shewing angular interspaces or compartments, mostly of a squarish form: on the gill-covers are five distinct cross-ridges, and a sixth less distinct below. Above each lateral line is a series of prominent tubercles, and the lateral line is near to and runs almost parallel with the middle of the back. The ventrals reach as far back as the pectorals.

*D.* 10—14.—*A.* 11.—*P.* 15.—*V.* 5.—*C.* 11.

General colour olive-brown, paler below, and whitish about the gill-openings, with all the fins blackish and obscurely mottled. Largest specimen obtained  $2\frac{3}{4}$  in.; but the species doubtless attains a much greater size.

Fam. ————— ?

*TOXOTES MICROLEPIS*, nobis, *n. s.* Exceedingly like *T. JACULATOR*, but the scales conspicuously very much smaller, especially on the lower half of the body; the eye being also proportionally rather larger, and the body-markings much more developed, forming broken or discontinuous longitudinal bands. The fin-rays appear to be the same. From the Sitang river.

Fam. *Anabantidæ*.

*COLISA VULGARIS*, C. V. Sitang river.

Fam. *Zeidæ*.

*MICROZEUS*, nobis, *n. g.* A remarkable minute fish, which is little

else than an exceedingly diminutive ZEUS (the genus to which the British 'John Dory,' or *Jaune dorée*, is referred); and both in its uniform dark brown colouring,\* and its remarkable great humeral spine, specially approximating the Z. PANGIO, C. V., of the Mediterranean, figured in the *Histoire des Poissons* (pl. 280). From the first dorsal, however, which commences at the middle or highest portion of the back, the outline of the head and body (as viewed laterally) describes a quarter of a circle, falling vertically at the mouth. The mouth, also, is not protrusile, but the lower jaw extrudes when it is open; both jaws being apparently furnished with a single row of minute teeth. No scales or lateral line discernible (and the latter would appear to be somewhat indistinct in the ZEUS PANGIO). The general shape is nearly as high as long, compressed; the head broader, and armed with a great tumid frontal casque, adjoining which are several distinct and prominent ovoid plates variously disposed, at the junction of two of which on the gill-cover and directly behind the eye, arises the great lateral spine, which, though directed backward, stands out from the sides of the body and is therefore particularly conspicuous when the fish is viewed from above or below. There are two dorsal fins, distinct though continuous at base; the anterior having spinous rays, and greatly resembling the corresponding fin of ZEUS PANGIO, only proportionally much smaller: all the other fins are distinct and well defined, but short and compact, with no rays elongated beyond the rest; tail slightly rounded, less so than in Z. PANGIO, and the ventrals are not elongated as in that species. No proper scales are discernible, but the body is uniformly studded with rough tubercles.

M. ARMATUS, nobis, *n. s.* A minute species,  $\frac{3}{8}$  in. long *minus* the tail, by somewhat exceeding  $\frac{1}{4}$  in. high *minus* the fins. As in various other Scomberoids, &c., there is a minute and concealed forward-directed spine (readily ascertained by the sense of touch) anterior to the first dorsal, which latter consists of ten moveable spines, of which the third is longest and the rest are successively shorter, followed by a distinct though conterminous fin containing about sixteen soft rays; the anal has three short spines, followed by about fourteen flexible rays; the ventrals have one spine and five or six soft rays;

\* This, however, I since learn is only when preserved in spirit.

and the short pectorals have about fifteen rays; the caudal about seventeen.

*D.* 10-16.—*A.* 3-14.—*V.* 1-5 or 6.—*P.* 15?—*C.* 17?

From the diminutive size of the fish, it is difficult to count the fin-rays even with the help of a magnifier. The colour (in spirit) is uniform dusky-brown; but Major W. S. Sherwill, who discovered this species in the Mutla river during the month of May, swimming in shoals of about fifty each, in mid-stream during the height of the tide, assures me that about ten individuals of such a shoal were of a brilliant cobalt-blue colour, about twenty bright yellow, and the remaining twenty a rich brown,—differences no doubt of sex and of breeding condition.

Fam. *Macrogathidæ*.

*MASTACEMBALUS*, GRONOV. Of this genus we possess—1. *M. UNICOLOR*, K. et v. H.; from the Sitang;—2. *M. PANCALUS*, (B. H.); very common in Lower Bengal;—3. *M. ZEBRINUS*, nobis, *J. A. S. XXVII*, 281, from the Sitang, which some might consider to be a strongly marked race of the last;—and 4. *M. ARMATUS*, Lacépède (apud Cuvier); very common in Lower Bengal, and here varying chiefly in the markings being more conspicuously developed in the young. It is accurately figured by Buchanan Hamilton, and incorrectly coloured (so far as the Bengal race is concerned) in the *Histoire des Poissons*. Dr. Bleeker identifies with it *M. ponticerianus* et *M. marmoratus*, C. V., and also *M. undulatus*, McClelland. The last is from China, and it agrees sufficiently with some Bengal examples of the species, except that it is stated to have three spines anterior to the anal fin; but I have seen none resembling in its variegation the *M. marmoratus*, C. V., and *M. venosus*, Val., as figured in the Zoology of Jacquemont's Voyage, nor the *M. armatus* as figured by Sykes. Dr. Jerdon recognised three species in S. India, all of which were considered by him to be different from that of Sykes—viz. his *ponticerianus*, which is doubtless true *ARMATUS* of Bengal, with 78 dorsal and 72 anal rays,—his *marmoratus* with *D.* 84 to 87 and *A.* 90 to 92,—and his *malabaricus* with 74 of each; the number of soft rays in the first and second according with those given by Cuvier and Valenciennes. A Tenasserim race now sent is a little differently marked from *ARMATUS* of Bengal, and the fins

(including the pectorals) are minutely speckled: but I considerably incline to the opinion that all will prove to be slight varieties only of *M. ARMATUS*,—excepting, of course, the *UNICOLOR*, *PANCALUS* and *ZEBRINUS*,—the last two being again very nearly affined to each other.

Fam. *Gobiidæ*.

Genus *ELEOTRIS*, Gronov. Five species are more or less commonly brought to the Calcutta fish-bazars. Of these, one—*E. MACRODON*—has minute scales; two—*E. POROCEPHALUS* and *E. INCERTA* (*n. s.*)—have small scales (and the former is less frequently obtainable than the others); and there are two with large scales—*E. BUTIS*, (*B. H.*, *v. humeralis*, Val.), and another which appears to be undescribed:—

*E. BUCCATA*, nobis, *n. s.* Affined to *E. CAPERATA*, Cantor, and at once distinguished by having a black spot at base of each pectoral fin, margined and dotted with bright gamboge-yellow. Scales larger than in *E. BUTIS*, (*B. H.*), a range of eight of them only from second dorsal to anal fins. The head very short, as high as broad, with a serrated ridge above each orbit, concave between the orbits and convex anteriorly above the mouth, with prominent scaled cheeks or præ-opercles; teeth small and uniform. In some specimens a series of dark transverse bands is distinctly traceable; one of them as broad as the first dorsal is long, the other being equal to the second dorsal: fins infuscated, more or less mottled, and the lower edged with yellow; the first ray of the second dorsal being elongated in some specimens.

*D.* 6-10.—*A.* 9.

Length 4 in. By no means a common species.\*

*E. CAVIFRONS*, nobis, *n. s.* Affined to *E. MACRODON*, Bleeker, but the scales fully twice as large, all the fins much longer, and a remarkable depression between the eyes; also the same scaleless line or groove from the eye to the insertion of the præ-opercle, conspicuously developed, as is described of *E. MADAGASCARIENSIS*. Head one-fourth

\* Though aware that Dr. Bleeker has subdivided the great genus *ELEOTRIS* (as it stands in the *Histoire des Poissons*), I have not seen his arrangement; but gather incidentally that *BUTIS* stands as the type of one group, and another distinct type of large-scaled species is exemplified by *E. CAPERATA* and *E. BUCCATA*.



of the total length: the pectorals reaching to the middle of the body. The lower jaw when closed exceeds in length and rises to the same plane as the upper; and in both jaws there is a row of larger teeth bordering the usual band of small teeth. Genital appendage rather long.

*D. 6-10.—A. 9.*

Colour greenish-albescent, much embrowned above; all the fins much speckled, the variegation shewing as numerous pale dots upon the caudal. Longest specimen  $4\frac{1}{4}$  in. Port Blair, Andamán Islands.

*E. INCERTA*, nobis, *n. s.* This is a species very similar to the last, and which is commonly brought to the Calcutta fish-bazars; but I have not known it to exceed 3 in. (or at most  $3\frac{1}{8}$  in.) in length, and the head is more than a quarter of the total length. In an example  $3\frac{1}{8}$  in. long, the head to point of gill-cover measures  $\frac{7}{8}$  in. In a few specimens—one or two thus characterized may generally be selected from two or three dozens—the curious feature occurs of a sharp reflected spine at the angle of the præ-opercle. In *E. BELOBRANCHA*, C. V., such spines occur on two of the gill-rays. The groove from the eye to the angle of the præ-opercle exists, but the naked line is more contracted than in *E. CAVIFRONS*. Dentition as in the latter, but the teeth are proportionally smaller. Fin-rays the same. Colour dull olive-brown, the pectorals whitish and minutely speckled, having a dusky spot at their base above, which does not occur in *E. CAVIFRONS*: dorsals, anal, and caudal, infuscated, the second dorsal prettily speckled with whitish and the other fins less distinctly variegated. Length mostly under 3 in.

*E. SCINTILLANS*, nobis, *n. s.* A species with only eight rays to the second dorsal and 6 (or perhaps 7) to the anal fins. General aspect very much that of an *OPHICEPHALUS*. Form short, the head nearly a third of the total length. Colour dull pale green, infuscated above and at the sides, with an appearance of two black spots above and below at base of tail; all the fins being inconspicuously speckled. As seen in spirit, many of the scales have a brilliant golden sparkle. Length of only specimen  $2\frac{1}{8}$  in. Port Blair, Andamán.

*E. FELICEPS*, nobis, *n. s.* Species remarkable for the approximation of the eyes, which are separated by an interspace only one-fourth of the diameter of the orbit. Scales, as in the preceding species,

moderately small, or of about the same proportionate size as in *E. POROCEPHALUS*. Mouth unusually small. Form rather short, with the head nearly a fourth of the total length. Rays of the first dorsal elongated into slight filaments. Ten rays in the second dorsal, and eight in the anal fins. Colour albescent-greenish, with numerous obscure and more or less confluent dusky spots on the sides (as best seen through a magnifier): all the fins being somewhat faintly variegated. Length of only specimen 2 in. Port Blair, Andamans.

I have introduced these Andamán species whilst treating of this genus; but the species of true *Gobius* thence received are very numerous, and, for the most part, are difficult to determine. An extraordinarily beautiful Goby of which I obtained a single specimen, some months ago, in one of the Calcutta fish bazars, appears to be the

*G. VIRIDIPUNCTATUS*, C. V. The fresh fish had a double row of brilliant greenish-cærulean large spots or patches on each side, which immediately and completely disappeared when it was put into spirit. Length  $5\frac{1}{2}$  in.

*AMBLYOPUS CIRRATUS*, nobis, *n. s.* A large and remarkable species, much shorter in proportion to its thickness than *A. HERMANNIANUS*, having the dorsal and anal fins much more elevated than in that species, and the pectorals also considerably broader; with the tail-fin quite distinct from the dorsal and anal, though connected at their extreme base only, the tail being broader and much less attenuated at tip than in the other; with eyes undiscernible in an adult preserved in spirit, but a pit in the centre of the face, and numerous flat lobes of skin around and about it; also with seven flat and pointed cirri about the symphysis of the lower jaw; and with the mouth more strongly reverted than in *A. HERMANNIANUS*, having all the teeth black at base.

*D.* 5-42.—*A.* 44.—*P.* 13.—*V.* 1-5.—*C.* 15.

Length of specimen 9 in.; and body  $1\frac{1}{2}$  in. deep posterior to the vent. A single example of this very strongly marked species was found among a lot of duplicates of *A. HERMANNIANUS*: origin unknown, but probably obtained in the Calcutta bazar.

*PERIOPHTHALMUS PAPILIO*, Bloch, Schn.: *P. fuscatus*, nobis, *J. A. S.* XXIII, 271 (the young). Agrees essentially with M. Valenciennes' figure of a species which he refers to *P. PAPILIO* from the W. coast

of Africa; but the tail is obliquely truncated underneath, as usual in the genus; and the high anterior dorsal fin is of a dusky plumbeous colour, with a conspicuous black margin which again is slightly fringed with white; there is ordinarily, however, no second white line below the black, as figured by M. Valenciennes, though I have found this in two small specimens, and the lower portion of the fin is often conspicuously speckled with white. General colour of the body fuscous above, subdued white beneath, the gill-covers more or less spotted with white, and rudimentary short transverse bands passing up from the white of the belly; neutral and anal fins white, the pectorals and caudal a little speckled. Length 5 in.; height of anterior dorsal fin  $1\frac{1}{4}$  in. in the finest examples. Common at Port Blair, Andamán islands.

P. 7—*RADIATUS*, (B. H.) Tenasserim and Calcutta specimens undistinguishable.

P. 13—*RADIATUS*, (B. H.) Ditto. The rays of the first dorsal vary from 11 to 13 in the males, and in the females this fin is either wanting altogether, or commonly so minute as to be discerned with difficulty, while in some examples five short rays are readily perceptible. Occasionally in the males the first or lengthened ray of the anterior dorsal is white to its base, and sometimes the second ray also. Mostly under  $3\frac{1}{2}$  in. in length.

*BOLEOPHTHALMUS INORNATUS*, nobis, *n. s.* A small species perhaps, with proportionally small mouth, the gape barely reaching to between the eyes; of a greenish colour, with about ten dark transverse bands, in general not very distinct; with colourless fins, excepting the two dorsal, the membranes of which are minutely speckled with black (as seen through a magnifier); the first dorsal being not more elongated than the second.

*D. 5-22.—A. 22.*

Our largest specimen measures 3 in. long, but is probably not full-grown. Tenasserim.

Fam. ————— ?

*NANDUS MARMORATUS*, C. V.: *Coius nandus*, B. H. Tenasserim. Common in Lower Bengal.

Fam. *Siluridæ*.

*BAGRUS LEUCOPHYSIS*, nobis, *n. s.* A restricted *BAGRUS*, of very

remarkable colouring; the head and fore-part of the body being bright silky-white above, studded with minute pores (as best seen under a magnifier). Maxillary cirri reaching to the end of adipose dorsal. Teeth and palatal band of them as usual in the genus. Eyes one-third of the vertical diameter of the head, and the two separated by an interspace equal to the orbit. Occipital process nearly as in *B. GULIO*, (B. H.) First dorsal spine short and triangular; the second elongated, moderately slender, and pectinated behind for its terminal third; the next two soft rays being longer than the spine. Pectoral spines very strongly pectinated behind. Adipose dorsal fin elongated longitudinally. Tail strongly forked.

*D.* 2-7.—*A.* 10.—*P.* 1-9.—*V.* 6.—*C.* 17.

Fins chiefly black, the rays of the first dorsal pale. Adipose dorsal pale and yellowish, studded with minute dusky specks, and having a slight dusky border. Base of ventrals yellowish, and an admixture of this colour on the pectorals, anal, and caudal. Body chiefly of a dark chocolate-brown, passing to silky-white anterior to the dorsal spine.\* Largest specimen  $5\frac{1}{2}$  in. long,  $1\frac{1}{4}$  in. high at the dorsal spine, and length of dorsal spine  $1\frac{1}{8}$  in. From the Sitang and other Burmese rivers.

*B. TENGARA*, (B. H.), *var.* Merely differs from *B. TENGARA* of Bengal by having constantly a strongly marked black spot near the tail, similar to the pectoral spot in both races. Tenasserim.

*B. CAVASIUS*, (B. H.), *var.* Differs only from the Bengal race by having a very distinct black mark at base of the dorsal spine, and in some individuals a distinct black spot also on the operculum,—markings which are only indicated in Gangetic specimens. Tenasserim.

*BATASIO*, nobis, *n. g.* A *Bagroid* form well worthy of distinction; comprising a number of small species with round and prominent muzzle, and the contracted mouth opening from below: with eight, or sometimes (?) six, cirri, which are very short, the maxillary cirri scarcely passing the eye in some. Palatal band of teeth continuous with the mass of maxillary teeth, or separated only by a slight groove. Rest as in *BAGRUS (verus)*.

\* This white recalls to mind that of the male of *HEPIALUS HUMULI*, an insect commonly known in England as the 'Ghost-moth.'—In the recent fish, the colour of the lower parts should be green, according to a communication just received from Major Tickell.

Type. B. BUCHANANI, nobis ; *Pimelodus batasio*, B. H.

B. AFFINIS, nobis, *n. s.* Exceedingly like B. BUCHANANI, as described by Buchanan Hamilton and as figured in one of his unpublished coloured drawings ; whereas his published figure (*F. G.* pl. XXIII. f. 60,) refers to his *Pimelodus carcio*, which is a true BAGRUS with moderately long maxillary cirri:—but having 12 instead of 16 anal rays, no distinct longitudinal black stripe on each side of the body, but a tendency to shew three or four broad cross-bands, more or less distinct, besides a round black spot near the gill-covers, as in the other. The first dark band proceeds obliquely downward from the fore-part of the first dorsal, to some distance below the lateral line ; and posterior to this first band are obscure traces of three or four others, the last at base of tail. On the membrane of the dorsal fin is a large blackish spot, consisting of minute dark specks. Maxillary cirri scarcely passing the eye ; the two inferior pairs of cirri minute. Length  $3\frac{1}{4}$  in. by  $\frac{3}{4}$  in. high, of dorsal spine  $\frac{1}{16}$  in., and of maxillary cirri under  $\frac{3}{8}$  in. Tenasserim.

To the same type, but with shorter adipose dorsal, appertain the TENGANA, CHANDAMARA, and RAMA of Buchanan Hamilton. B. CHANDAMARA is referred to SILUNDIA by M. Valenciennes, and is described by Hamilton to have only two cirri ; but his unpublished figure represents six cirri distinctly, and in all this group the minute cirri are discernible with difficulty and are extremely liable to be overlooked. The BAGRUS CAPENSIS of Sir A. Smith's 'Illustrations of S. African Zoology' would appear also to be referrible to this particular division.

Of the well marked type exemplified by BAGRUS SONDAICUS and B. DOROIDES of Valenciennes, Dr. Bleeker constitutes his genus HEXANEMATICHTHYS. The latter species, however, I consider to be—

H. SAGUR ; *Pimelodus sagur*, B. H. : *Bagrus doroides*, Val. For a few days, in the month of March, 1859, several specimens were brought to the Calcutta bazar ; and the largest obtained by me was  $22\frac{1}{2}$  in. long, with dorsal spine  $2\frac{3}{4}$  in., and pectoral spines  $3\frac{3}{8}$  in. ; the membrane prolonged into a short filament beyond the spines : the latter are granulose, striated, with a regular series of tubercles in front, which are round on the pectoral spines and *omega*-shaped on the dorsal. Maxillary cirri reaching back to beyond the posterior

base of the pectorals, as far as the tip of the triangular granulose bone above the pectorals and behind the gill-cover. Osseous plate broad, and uniformly granulose almost to the ventrals; the second plate, anterior to the base of dorsal, large and bilobate or *saddle-shaped*. A series of granulose ossicles continued along the lateral line, nearly as far as the posterior base of the dorsal fin. Colour uniform livid plumbeous above, spotless pearly-white below: a series of transverse dull silvery bands, each with a row of pores along its anterior margin,\* above the lateral line: no dark spot on adipose dorsal; the membrane of anterior dorsal pale, and of the other fins purple-black. Eyes moderate, with yellow irides.

Another type is rightly discriminated by Dr. Bleeker by the name CEPHALOCASSIS, comprising species both from the Old World and the New. Among them are —

C. SONA; *Pimelodus sona*, B. H.: *P. auratus*, B. H., MS.: *Bagrus arioides*, Val.

C. GAGORIDES; *Bagrus gagorides*, C. V.; *Pimelodus gagora*, B. H. (in part), vide *J. A. S.* XXVII, 285.

C. TRACHYPOMUS; *B. trachypomus*, C. V.; which I am now satisfied is distinct from GAGORIDES, though I have not obtained it. Indeed, the *habitat* of this fish is not stated.

ARIUS is restricted by Dr. Bleeker to the type exemplified by *P. arius* and *P. gagora*, B. H., with two groups of blunt teeth on the palate. The following also belongs to it.

A. JATIUS; *Pimelodus jatius*, B. H. Stated to have no palatal teeth; and certainly they are not always discernible in the recent fish.† But in most fresh specimens, and always soon after death, or in the dry skin, two oblique oval masses of round tubercle-like teeth are seen, very far back on the palate, and a few similar teeth detached from the others by a long interval are placed in two small lateral masses nearer to the card-like maxillary teeth. General aspect of A. GAGORA, but with the face anterior to the eyes considerably longer: maxillary cirri reaching only to the white spot on centre of

\* These are difficult to discern in the dry skin.

† In a description which I took from the first specimen obtained, I underlined the statement that it had no palatal teeth.

forehead. Dorsal and pectoral spines resembling those of *A. GAGORA*, being of the same proportional length and thickness but less distinctly pectinated behind. Cephalic plate much less uniformly tuberculated than in *A. GAGORA*, and considerably more grooved or lineated and having fewer tubercles anteriorly: small bony crescent anterior to the dorsal spine prolonged on either side to a point, and tuberculated only in the middle. Colour lurid, passing to silvery on the sides below the lateral line, and white underneath; the fins also white, and a black spot on the adipose dorsal: irides pearly-white: mouth small and of a yellow colour. The largest specimen obtained is 29 in. long, with dorsal spine  $4\frac{1}{8}$  in. This species is but occasionally brought to the Calcutta fish-bazars, and generally more or less stale and unfit for preservation, as if not taken in the immediate neighbourhood.\*

*GAGATA*, Bleeker. This, as it now stands, is a heterogeneous assemblage of species, and I know of none that can properly range with the type of it, which is *Pimelodus gagata*, B. H.: a species with the maxillary cirri bony towards the base, as in *BAGARIUS* to a much greater extent. The *MENODA* dubiously referred to this type by Dr. Bleeker is identical with *Bagrus corsula*, Val., which therefore must stand as *B. MENODA*, (B. H.); the *MANGOIS* appertaining to my genus *AMBLYCEPS*; and another type may be here indicated as—

*HARA*, nobis, *n. g.* With broad maxillary cirri, soft throughout, and annulated with two colours: the pectoral spines short, flat, and pectinated on both edges; the dorsal spine less stout, serrated on both edges or behind only: mouth small, terminal, but opening below: head flattish, with small eyes placed high: a band of card-like palatal teeth. Colouring dark and minutely mottled.

Type. *H. BUCHANANI*, nobis; *Pimelodus hara*, B. H.

*H. FILAMENTOSA*, nobis, *n. s.* Very like *H. BUCHANANI*; but having a long filament continued from the upper segment of the caudal fin. The markings are difficult to describe, from their intricacy; but two

\* To the list of *Siluridiæ* obtained in the Calcutta bazars, published in Vol. XXVII, p. 283 *et seq.*, have accordingly to be added—

*HEXANEMATICTHYS SAGUR*, (B. H.)

*ARIUS JATIUS*, (B. H.): as also

*CHACA LOPHIODES*, Val.: *Platystaca chaca*, B. H.

irregular speckled-whitish transverse bands are constant, preceded each by a blackish band, the first white band being anterior and the second posterior to the adipose dorsal; a row of whitish spots on the membrane of the dorsal; two dark bands, one of them basal, on the ventrals; and a black band at base of anal fin. Length 3 in.; of caudal filament 1 in. more. Tenasserim.

To this genus must also be referred the (*Pimelodus*) *CONTA*, B. H., with a deeply furcate tail, the upper lobe of which is longer and more attenuated; as also the (*P.*) *CARNATACA*, Jerdon, and the (*P.*) *ASPERA*, McClelland, *C. J. N. H.*, IV, 404, and pl. XXIV, f. 2.

Another distinct type occurs in the (*P.*) *CENIA* and (*P.*) *VIRIDESCENS*, B. H. These are referred doubtfully by Dr. Bleeker to his *HEMIPIMELODUS*; as also (*P.*) *JATIUS*, B. H., which is a true *ARIUS*, as already shewn. If the *Nallah Jellah* of Russell (pl. CLXX) be a proper *HEMIPIMELODUS* as assigned by Dr. Bleeker, then the *CENIA* group is quite distinct; and the (*P.*) *TELCHITTA*, B. H., again, represents a special type with additional species in S. India.

*AMBLYCEPS*, nobis, *J. A. S.* XXVII, 281. Type *AMB. CÆCUTIENS*, nobis, *ibid.* ('*Cobitis*-like Siluroid,' XXIV, 712). To this genus should be referred the (*Pimelodus*) *MANGOIS*, B. H., figured among his unpublished drawings; but the form is rather less elongated, the tail more sharply forked, the eyes (to judge from the drawing) more distinct, and the adipose dorsal better defined and less distant from the first dorsal, than in *A. CÆCUTIENS*.

*A. TENUISPINIS*, nobis, *n. s.* A third species, distinguished by the slenderness of its short dorsal and pectoral spines, and also by the fineness of its eight cirri: eyes minute and difficult to be distinguished: adipose dorsal indistinct and pointed posteriorly: six soft rays to the dorsal and nine to the anal, the first of the latter being short and the next two successively longer. Colour uniform dark greenish olive-brown. The lateral line wanting in all the species. Length 2 in. A single specimen procured at Gházipur by Dr. Jerdon, and presented by him to the museum.

*GLYPTOSTERNON*, McClelland. It appears that as many as four very distinct generic types have been brought together under this name by Mr. McClelland, in the five species which he has described



in the second volume of the *Calcutta Journal of Natural History*, pp. 584-8.

The species first described by him is his *GL. RETICULATUS*, from Afghánistán. It is stated to be "without spines; the first ray of the pectoral and ventral fins soft and pinnate, giving off soft pointed cartilaginous rays along the anterior margin, which are enveloped in the membrane of the fin. *The under surface of the head and of the anterior portion of the body forms a flat corrugated surface.*" Gill-covers — ? Cirri — ? This form will remain as typical *GLYPTOSTERNON*.

A second type (*PSEUDECHENEIS*, nobis, *n. g.*) is figured and very unsatisfactorily described as *GL. SULCATUS*. All that is stated is— "An oval disk on the breast between the pectorals, composed of *transverse plates* as in the *Remora* (*ECHENEIS*), and a series of similar plates on the broad lower surface of the first rays of the ventrals." No mention of spinous rays: and from the figure published it is doubtful if the gill-coverings are visible from below. Adipose dorsal distinct and well developed. Mouth figured as small, subterminal; with tolerably developed maxillary cirri; the six other cirri small.

"*D. 8.—A. 9.—P. 13.—V. 7.—C. 16.*"

The third type is that of his *GL. STRIATUS* and apparently his *GL. PECTINOPTERUS*, respectively from the Khásya hills and the vicinity of Simla. We have what appears to be the former from Dorjiling; also another species from the same locality, but in too imperfect condition to permit of a description being taken of it. A fine third species likewise from the Tenasserim provinces. This type may be denominated

*GLYPTOTHORAX*, nobis, *n. g.* Mouth subterminal, large, with a band of card-like maxillary teeth above and below: gill-openings large, and nearly meeting below; and behind them a pectoral adhesive disk grooved longitudinally. Maxillary cirri rather large, with a concealed spinelet at their base; the six other cirri moderate. Adipose dorsal distinct and well defined; the anal fin moderate or somewhat large. Dorsal spine well developed, smooth, feebly pectinated behind towards its tip; the pectoral spines broad and flat, and strongly pectinated behind: a distinct spinous base also to the first ventral ray.

*GL. TRILINEATUS*, nobis, *n. s.* Typical in structure, and of a

blackish colour, with three longitudinal yellow lines, one along the entire ridge of the back from occiput to base of tail, the others along each lateral line. Dorsal spine two-thirds of the length of the first soft ray. Lobes of the furcate tail subequal, the lower rather the larger and longer.

*D.* 1-7.—*A.* 12.—*P.* 11.—*V.* 6.—*C.* 15.

The chief structural difference from *GL. STRIATUS* consists in its having three more rays to the anal fin. Length  $5\frac{1}{2}$  in. Tenasserim.

The fourth type is very distinct in the form of the mouth, and has remarkably small gill-openings which are visible only from above. I term it

*EXOSTOMA*, nobis, *n. g.* Otherwise generally similar to *GLYPTOTHORAX*, but with no pectoral disk, the dorsal spine exceedingly slender (if always present?), and the eyes somewhat larger. "Lips reflected and spread continuously round the mouth, so as to form a broad flat sucker." Two distinct lateral lobes of minute card-like teeth, both above and below, reflected much apart, and having an obviously suctional centre. Only one pair of lower cirri, situate at the posterior corners of the reflected lower or hinder lip: the entire lower-parts smooth and flat. Anal fin small; the adipose dorsal lengthened but very slight and low, extending nearly to the caudal.

*EX. BERDMOREI*, nobis, *n. s.* Maxillary cirri reaching beyond the base of the pectoral spines, and no distinct spinelet at the base of the latter; but a spinous base to the first ray of the ventrals: lower caudal lobe much broader and longer than the upper.

*D.* 7.—*A.* 6.—*P.* 1-10.—*V.* 1-5.—*C.* 14.

Colour dingy olive-brown, with obscure broad dark bands, presenting more or less of a clouded appearance; the fins mostly darker: below pale. Largest specimen 4 in. Tenasserim.

*EX LABIATUM*; *Glyptosternon labiatum*, McClelland. Dorsal described to be "perfectly soft and free from spines and bristling points; cirri very short." No notice of the colouring. From the Mishmi hills, E. Asám.

Dr. Bleeker refers the (*Pimelodus*) *NANGRA*, B. H., to *GLYPTOSTERNON*; but this I cannot understand. *Vide* Hamilton's published figures. He also gives a *GL. PLATYPOGON*, (K. et v. H.), from Java

and Hindustan, and a *GL. PLATYPOGONOIDES*, Blkr, from Sumatra; both of which appear to fall under *GLYPTOTHORAX*, nobis, *ut supra*.

*EUTROPIUS MACROPHALMOS*, nobis, *n. s.* Of the usual form of this genus, but with remarkably large eyes, that occupy more than half of the height of the head. Longer maxillary cirri reaching to the vent, the four inferior cirri to base of pectorals: spines slender, the pectoral less so, and all minutely pectinated behind; the dorsal also jagged in front for its basal half.

*D.* 1-7.—*A.* 47 to 54.

Colour bright silvery, infuscated along the back, with a golden lustre on the gill-covers. Soft rays of the dorsal and pectorals infuscated except at base; also the medial portion of the deeply forked caudal, while several outer rays of the caudal above and below are white throughout. Ventrals and anal white: the slender adipose fin having minute dusky spots. Longest specimen  $6\frac{1}{2}$  in. Tenasserim.

*SILURICHTHYS BERDMOREI*, nobis, *n. s.* Maxillary cirri reaching to base of ventrals, the inferior to base of pectorals. The upper jaw slightly longer than the lower. Eyes small. Dorsal fin slight and slender, but seeming to consist of three or four rays. Pectoral spine short, only half of the length of the fin.

*D.* 3 or 4.—*A.* about 65. *P.* 1-13.—*V.* 11.—*C.* 17.

Anal continuous with the caudal, but distinctly defined. General colour dull olive-brown, paler below. Length of specimen  $4\frac{3}{4}$  in., by  $\frac{3}{4}$  in. deep at dorsal. Head  $\frac{3}{4}$  in. Tenasserim.

*PSEUDOSILURUS MACROPHALMOS*, nobis, *n. s.* General form of *Ps. FABDA*, (B. H., *microcephalus*, Blkr), but proportionally less deep and more elongated, with eye of twice the diameter, and the lower jaw closing evenly with the upper, or very nearly so, though protruding when the mouth is open; maxillary cirri much longer, reaching far beyond the more developed pectorals; the anterior bands of teeth above and below much less broad, and the palatal teeth reduced to two straight and well detached transverse patches.

*D.* 4.—*A.* 75.—*P.* 1-13.—*V.* 7.—*C.* 19 or 20.

Colour dull silvery, much embrowned, especially above, with a greenish tinge, probably more decided in the recent fish. Length of specimen  $9\frac{1}{4}$  in., by  $1\frac{3}{8}$  in. in a vertical line from dorsal to ventral; head  $1\frac{1}{2}$  in.; pectorals  $1\frac{3}{8}$  in.; maxillary cirri  $3\frac{1}{2}$  in., becoming

extremely fine towards the end. A large round dark spot on each side, situate on the lateral line, a little anterior to the dorsal fin. Tenasserim.

Fam. *Cyprinidæ*.

*BARBUS CAUDIMARGINATUS*, nobis. *n. s.* One of those *SYSTEMI* (for such they essentially are) which, having four barbules or tentacles, are currently assigned to the great and comprehensive genus *BARBUS*: such are the *B. GORDONIDES* and *B. CHRYSOPOMA* figured by Valenciennes, and the *B. SARANA*, (*B. H.*), Val., which is *S. immaculatus* as described by McClelland.\* In the present species the barbules are well developed, the form less deep than usual in the particular group, the principal dorsal spine robust and passing into a soft ray for its terminal fourth, being finely pectinated behind, and preceded by three distinct spines, the first very minute. About 32 scales on the lateral line, and ten longitudinal series of scales.

*D.* 4-8.—*A.* 7 (the last divided).

Colour silvery, above darker and greenish; with an irregular vertical black mark behind the gills, and broad black upper and lower margins to the caudal fin; the rest of the caudal, with the ventrals and anal, bright crimson (which soon disappears in spirit). Length 4 in., by  $1\frac{1}{2}$  in. from dorsal to ventrals. Vertical diameter of the eye fully half that of the head. Irides pale golden. Tenasserim provinces.†

*CAPOETA MACROLEPIDOTA* (?), K. et v. H. Specimen 2 in. long. No serrature discernible on the dorsal spine, and I distinguish seven anal rays. The late Dr. Cantor gives this species as inhabiting the Tenasserim provinces; and it and *LEUCISCUS BASBORA* are the only

\* His figure (*As. Res.* XIX, II, Pl. XL, f. 5), I take, from the colouring, to represent a common species of *SYSTEMI* with one pair of very minute tentacles, otherwise resembling *S. SOPHORE* except in the absence of markings. For this the name *IMMACULATUS* might be retained. It grows to about double the size of *S. SOPHORE*.

† 'Black and red-tailed *Systemus*' of the Rev. F. Mason's 'Natural Productions of Burma.' Several species are indicated in this work, as *ROHITA VULGARIS*, *R. CALBASU*, and *R. NANDINA*; also a large Barbel affined to *B. TOR*, (*B. H.*), which he terms *B. MORTONIUS*; and a mountain Barbel with minute scales, of the *OREINUS* group, which requires examination.

*Cyprinidæ* which are included in his Catalogue of Malayan fishes. Tenasserim.

Genus *OSTEOBRAMA*, Heckel. Comprising certain Bream-shaped Carps with minute scales, as exemplified by the (*Rohtee*) *VIGORSII* and (*R.*) *OGILBII* of Sykes, and the (*Leuciscus*) *ALFREDIANUS* of Valenciennes.\* Dr. Bleeker includes them in *SYSTEMUS*.

*O. MICROLEPIS*; *Systemus microlepis*, nobis, *J. A. S.* XXVII, 289. ('Tenasserim Bream' of Mason.) A specimen obtained by Mr. Atkinson at Maulmein; and I am now certain that the example formerly described is also from Maulmein, having been sent many years ago by the Rev. F. Mason. Colour silvery-ash above the lateral line, white below it, and a semi-obsolete large blackish spot near base of tail: fins white, a little tinged with yellow; and the irides apparently pale golden. From analogy with kindred species, it is probable that this fish attains a weight of 3 or 4 lbs.

*O. COTIS*; *Cyprinus cotis*, B. H.; *Abramis cotis* apud McClelland; *Leuciscus alfredianus* (?), Val. A Tenasserim specimen 3 in. long accords with the description, excepting in having but 32 instead of 36 rays to the anal fin.† The second dorsal ray is spinous, but very slender, and is conspicuously serrated on the hind-edge. In lieu of the row of four dots close under the lateral line and immediately behind the gill-cover, figured by Buchanan Hamilton, are four scales of the lateral line having remarkably large tubes; and most of the soft rays of the dorsal are marked anteriorly with black, and the rays of the anal are spotted with the same anteriorly, as seen with the help of a magnifier. The merest trace of a slight dark spot in front of the dorsal fin.

\* Figured in the *Histoire des Poissons* by this name; but described as *L. Duvaucelii* (by which appellation a species of *SYSTEMUS* is also described and figured),—having "le premier rayon de la dorsale forte et un peu dentelé." From Nipal. It appears that three divisions of these spined Bream-carps are recognised by Heckel, bearing the names *ACANTROBRAMA*, *OSTEOBRAMA*, and *GLOSODON*. I am unacquainted with the distinctions; but find that *ROHTEE OGILBII*, Sykes, is assigned to *OSTEOBRAMA*, as is likewise the (*Cyprinus*) *COTIS*, B. H. *Vide* Hugel's *Fauna von Kaschmir*, p. 392.

† McClelland also counts 32 rays. (*As. Res.* XIX, II, 588). But Valenciennes counts 36 in his *ALFREDIANUS*.

*SYSTEMUS* (?) *MACULARIUS*, nobis, *n. s.* Affined to the preceding in shape of head: the muzzle unusually prolonged anterior to the nostrils, where shewing a considerable concavity above. Body less deep than usual; its lower outline continued straight to the base of the anal fin. Principal dorsal spine unusually large in every way, and strongly pectinated behind: anterior to it are distinctly three others, the first very minute: large anal and first ventral spines passing gradually into soft rays towards their tips. Series of 35 or 36 scales along the lateral line, and of 12 obliquely downward from base of dorsal spine.

*D.* 4-8.—*A.* 3-6.—*P.* 17.—*V.* 1-8.—*C.* 21.

Colour pale olivaceous, deeper on the back; each scale having a distinct shining blackish spot at tip, less conspicuous on the browner scales of the back; fins pale; the tail well forked. Length 6 in., by  $1\frac{1}{2}$  in. high in the body; of principal dorsal spine *plus*  $1\frac{1}{4}$  in. Tenasserim.

*S. DUVAUCELII*; *Leuciscus Duvaucelii*, Val., *H. P.* pl. 491. Tenasserim.

*S. PHUTONIO*, (? B. H.) Five specimens, averaging  $1\frac{3}{4}$  in. long, a trifle more or less.

*D.* 2-8.—*A.* 1-6.

Fins spotless. A transverse black bar on the medial third of the body, above the middle of the pectorals, and a broader black transverse bar towards the tail, appearing generally as a round spot that had *run* more or less above and below. From Maulmein. What appears to be the same fish in Lower Bengal, I have never obtained more than  $1\frac{1}{2}$  in. long, and the anterior transverse streak is invariably longer and better defined, occupying the medial two-fifths of the depth of the body above the middle of the pectoral fins. The fins of the Tenasserim fish seem also to be proportionally larger.

*S.* (?) *UNIMACULATUS*, nobis, *n. s.* Species much resembling in outline the *LEUCISCUS COSUATIS*, (B. H., as figured by McClelland by the name *Systemus maculatus*, *As. Res.* XIX, II, pl. XLIV, f. 9), but the scales are proportionally smaller, and there are three distinct spines to the dorsal fin, the principal one being very slender, smooth or unserrated, and those of the anal barely recognisable as such. Colour pale silvery-brown, with one great black spot on the dorsal

fin towards its base. Lateral line very indistinct from below the commencement of the dorsal.

*D.* 3-8.—*A.* 2-5 ?

About 24 scales longitudinally, and 8 or 9 obliquely downward from the dorsal. Largest specimen but  $1\frac{3}{8}$  in. Tenasserim.

Genus PLATYCARA, McClelland (as originally founded on his PL. NASUTA, which is a large-scaled Cyprin altogether distinct from BALITORA of Gray, which Mr. McClelland most unaccountably unites with his PLATYCARA):\* *Bangana*, Gray (*nec* B. Hamilton); comprising *Discognathus*, Heckel; and the more typical Indian species doubtfully referred to LOBOCHEILOS by Dr. Bleeker. A genus of Gudgeons inhabiting mountain rapids, the more characteristic species having a great transverse cleft on the face studded with large tubular pores, and also an adhesive disk to the lower lip,—which group Mr. McClelland referred to RICNORHYNCHUS (as adopted by him), without perceiving that his PLATYCARA NASUTA and also his PL. LISSORHYNCHA strictly belonged to it, equally with other species which he has figured in *As. Res.* XIX, pl. LIII, in some of which the face is smooth and not cleft and the labial disk is greatly reduced, as illustrated also by the *Discognathus fusiformis*, Heckel, of Baron Hugel's *Fauna von Kaschmir* (p. 378). As examples of the more typical form may be cited the *Cyprinus (Bangana) falcata* and *O. gotyla*, B. H., of Hardwicke's *Illustrations of Indian Zoology*: but all shew a strong tendency to the BALITORA form of pectorals; all that I have seen having likewise large ventrals, and the backward position of the mouth which opens downwards, and fimbriated anterior lip, seem to be of constant occurrence. The cleft and tubercular face occurs in another type, exemplified by the GOBIO RICNORHYNCHUS of McClelland, which (so far as I know at present) stands quite alone, as a particular type worthy of a special designation.† The

\* *J. A. S.* VII, 947, and pl. LV, fs. 2, *a* and *b*; copied into *As. Res.* XIX, pl. LVII, *f.* 2, with *a* and *b*. The mistake of uniting these two incongruous genera is repeated in *Calc. Journ. N. H.*, Vol. II, p. 587, and pl. XVI; where a species of the mountain type of Gudgeon is described and figured as PLATYCARA LISSORHYNCHA, and a true BALITORA as PL. ANISURUS!

† Perhaps true LOBOCHEILOS? It approximates the TYLOBHYNCHUS, Heckel, but the duplication of the lips and great chin-pore are peculiar. To TYLOG-

extremes of the present genus are connected by intermediate gradations, of which the *PL. NASUTA* of McClelland presents a good illustration.\*

A highly typical species, with every character developed in the utmost degree, may be designated—

*PL. NOTATA*, nobis, *n. s.* Easily recognized by having five conspicuous black spots on the base of its dorsal fin. Four labial cirri, the hindmost liable to be overlooked. Scales on lateral line 33, and 8 from dorsal to ventral: the dorsal rather high and falcate anteriorly. Ventrals as large as the pectorals, and somewhat falcate; the anal more decidedly so.

*D.* 10.—*A.* 7.—*P.* 15.—*V.* 9.—*C.* 20.

Colour dusky olive-green above and on the sides, beneath buffy-albescent. Base of the dorsal fin whitish, setting off a series of black spots, larger anteriorly and the hindmost generally obsolete; rest of the fin a little nigrescent. One or more spots also at base of the anal fin. Pectorals somewhat yellowish at base, then blackish: a dusky line along each longitudinal row of scales becoming gradually visible towards the tail. Length 6 to 6½ in. Tenasserim.

The next has a smooth muzzle and almost rudimentary disk.

*PL. LATIUS*; *Cyprinus latius*, B. H.: *Gonorhynchus macrosomus*, McClelland. Tenasserim.

*LABEO CURCHIUS*; *Cyprinus eurchius*, B. H. What I take to be this species accords with the fin-ray formula assigned by McClelland (*As. Res.* XIX, II, 328); but I count only about 64 (instead of 78) rows of scales along the lateral line, and but 17 or 18 (instead of 30) rows from dorsal to ventrals. No proper “stripe along the middle

*NATHUS*, Dr. Heckel refers the *Varicorhinus diplostomus* of the *Fische aus Caschmir*, by the new specific name of *Valenciennesii*; and the *Barbus diplocheilus* of the same work is now his *T. BARBATULUS*. A third species, from the Bombay Presidency, is also described by him as *T. PORCELLUS*. (Vide *Fauna von Kaschmir*, pp. 376, 378, and 385). The true *VARICORHINUS* of Rüppell has spines to the dorsal fin; wherefore *V. bobree* of Sykes also cannot properly be retained in it.

\* I think, however, that the so-called ‘Mountain Trout’ of Kumâon, figured by Mr. McClelland in *J. A. S.* IV, 40, with its minute scales and other striking distinctions, is erroneously placed by him in this particular group in *As. Res.* XIX, II, 281, 367.



of the anal fin," as described by B. Hamilton; but all the fins are more or less minutely dotted, the dots tending to form a slight stripe along the lower half of several of the rays of the dorsal, anal, and ventral fins, the ventral and lower half of the caudal being more decidedly suffused with blackish.

*D.* 17.—*A.* 8.—*P.* 15.—*V.* 9.—*C.* 19.

The first rays of the dorsal and anal being minute, and the first three rays of each of these fins joined as usual. Tenasserim provinces.

*DANGILA BERDMOREI*, nobis, *n. s.* Readily distinguished by having a black spot at the tip of every scale. Head  $4\frac{1}{2}$  times in the total length. Height about the same. Tentacles small and fine. Eye larger than in *D. CUVIERI* (figured by Valenciennes), and the back rising evenly from the muzzle to the base of the dorsal fin. About 40 scales on the lateral line, and 12 or 13 longitudinal rows.

*D.* 28.—*A.* 9.

Colour silvery, paler below, and each scale marked as described: the membrane of the dorsal fin minutely dotted, and all the fins slightly tinged with yellow. Length of only specimen  $4\frac{1}{8}$  in.; the dorsal nearly  $\frac{3}{4}$  in. high in front. Tenasserim provinces.

*LEUCISCUS ANJANA*, (B. H.): *L. lateralis*, McClelland. Tenasserim.

*NURIA*, Valenciennes. The members of this genus are *LEUCISCI*, with the dorsal fin placed far backward as in *PERILAMPUS*, but the anal is short as in *LEUCISCUS* proper, and there are four slender and rigid maxillary filaments, the upper sometimes of great length. To this genus belong *N. SUTIHA*, (B. H.), *JOJIA*, (ibid.), and (*Leuciscus*) *BARBATUS*, Jerdon.

*N. ALTA*, nobis, *n. s.* Of comparatively large size and deeper in the body than any previously described; but evidently nearly affined to *N. BARBATA*, (Jerdon), and like it with 32 scales along the body in 7 rows; each scale having three or four distinct diverging ridges. Upper filaments of great length, more than reaching to the anal fin; the other pair minute. Pectorals reaching to the ventrals.

*D.* 8.—*A.* 7.

Colour ruddy, with a broad yellow lateral band surmounted by a nearly obsolete black streak: gill-covers silvery; and a black spot above the base of the pectorals: fins pale and yellowish, more or less

tinged with dusky in the young. Length 4 in., by rather more than 1 in. in depth. Tenasserim.

*N. ALBOLINEATA*, nobis, *n. s.* Both broader and deeper in the body than *N. DANRICA*, (B. H.), with the muzzle scarcely upturned, and a longer anal fin—more immediately approximating the species to *PERILAMPUS* (as restricted). Upper filaments reaching to the tips of the pectorals, which latter do not reach to the base of the ventrals; the base of the dorsal is scarcely anterior to that of the anal; ventrals somewhat short.

*D. 9.—A. 10.*

Colour olive-green on the upper half, buffy-white below, with a broadish white stripe along the hind-half of the body chiefly, narrowing anteriorly, and more or less distinctly bordered by a blackish stripe above and another below, the lower more developed and becoming conspicuous towards the tail. A fuscous tinge on the pectoral fins; the other fins colourless, or perhaps yellowish. Length 2 in. or less. Tenasserim.

*PERILAMPUS FULVESCENS*, nobis, *n. s.* A species without cirri, and deep in the body, much resembling in form the *P. LOYOKULA*, (B. H., v. *P. psilopterus*, McClelland), but having longer and more pointed pectorals reaching nearly to the anal.

*D. 10.—A. 22.*

Colour (in spirit) dull fulvous, with a just perceptible narrow dark lateral streak, a little more decided towards the tail: infra-orbital plates and gill-covers bright silvery: irides yellow. Fins white, with a faint nigrescent wash, especially on the tail; the first ray of the ventrals much lengthened, as in certain affined species. Length  $2\frac{1}{2}$  in. Tenasserim.

*P. AFFINIS*, nobis, *n. s.* Greatly resembles *P. LINEOLATUS*, nobis (*J. A. S. XXVII*, 289); but is a degree more typical, with the head distinctly upturned, and the anterior base of the dorsal is less forward, being more nearly parallel with that of the ventrals. It has also 13 dorsal and 16 anal rays, instead of 12 and 14. Markings obsolete on the anterior third of body, but the medial streak to base of tail very dark, bordered by a narrow pale streak above and by another below, and the dark one above this, again, broader than in *P. LINEOLATUS*. Length  $2\frac{3}{4}$  in. Tenasserim.

PELECUS BACAILA, (B. H.) Tenasserim.

MOLA, nobis, *n. g.* A well marked group, which Dr. Jerdon referred to RHODEUS of Agassiz, founded on the *Cyprinus amarus*, auct. It is a form of LEUCISCUS, having very small scales; the mouth terminal and opening upward, with the lower jaw longer; no cirri; the eyes large, placed laterally near the muzzle. Form compressed, rather deep, the back considerably arched, with the dorsal medial or nearly so, and no osseous ray; dorsal and anal fins with few rays. The lateral line commences high, proceeding downward and then backward, and terminating abruptly about the middle of the body. No spots or other markings, beyond a broad silvery streak along the sides.

Type M. BUCHANANI, nobis; *Cyprinus mola*, B. H.

M. ATKINSONII, nobis, *n. s.* Very similar to M. BUCHANANI, but attains a larger size, and the scales are conspicuously larger in proportion, the lateral silvery streak being also much broader and less defined; no tinge of blackish on the fins. Scales about 56 by 20 (but difficult to count).

D. 8.—A. 7.—P. 15.—V. 9.—C. 19.

Length  $4\frac{1}{2}$  in. by  $1\frac{3}{8}$  in. deep. Tenasserim.

N. B.—The (*Rhodeus*) INDICUS and (*Rh.*) MACROCEPHALUS, Jerdon (*Madr. Journ. Lit. Sc.* XV, 324), appertain to this particular type; and the *Leuciscus microlepis*, Blkr. is probably identical with M. MACROCEPHALUS, (Jerdon). The (*Leuciscus*) HARENGULA and (*L.*) METELLINA of Valenciennes should also range in the same division, even if the lateral line be continuous, as represented in the figures of those species.

Fam. *Cobitidæ*. The Loches. As suggested to me by Dr. Jerdon, the species of the old genus COBITIS constitute an extensive natural family, equivalent to *Cyprinidæ*, *Salmonidæ*, *Siluridæ*, &c., and need to be distributed into various genera.\* In the *Histoire des Poissons*,

\* Mr. Swainson recognises *Cobitidæ* as a distinct family; but then he regards the Carps, the Salmon, the Herrings, the Pikes and the Flying fishes, as 'subfamilies' only of *Salmonidæ*! Though why he distinguished *Esocinæ* from *Exocatinæ* does not appear, unless to complete his magic 'circle' of five; for he describes ESOX under *Exocatinæ*! In like manner, he tried (of course) to form a 'circle of five' of his *Cobitidæ*, but most unsatisfactorily, and with

M. Valenciennes recognises COBITIS only, with the addition of BALITORA, Gray, to which he refers the HOMALOPTERA of Kuhl and von Hasselt; but a Tenasserim species conforms in type to the H. ERYTHROPTERA, K. et v. H., and differs considerably from true BALITORA, as the latter differs entirely from the PLATYCARA of McClelland (as originally constituted upon his PL. NASUTA, which, as we have seen, is a large-scaled Cyprin). The ordinary Loches have been commonly arranged according to the presence or absence of a moveable forked spine under or before the eye; but Mr. McClelland divides them according to the shape of the tail into *Cobitis* and *Schistura*, each comprising both spined and spineless species. The series now to classify necessitates the adoption of further subdivisions and the admission of some entirely new forms.

I.—BOTIA, Gray; founded on B. GRANDIS, Gray, figured in Hardwicke's 'Illustrations of Indian Zoology;' to which have been rightly added the (*Cobitis*) GETA and (C.) DARIO of B. Hamilton. These have more the form of ordinary Cyprins, and a strongly forked tail: the air-vessel as usual in the Carp family. We have now five species in the museum, comprising two hitherto undescribed which nearly approximate B. GRANDIS, but have the muzzle less prolonged—so that the distance from the eye to the muzzle is a fourth less. All have a stout forked spine under each eye, of which the second or posterior prong is much longer than the anterior; and their colours are bright black and yellow, with barred markings on the fins.

1. B. GRANDIS, Gray (*nec apud* McClelland, *C. J. N. H.* II, 586). Of this we possess a blanched specimen from Almoreh, presented by the late Major R. Wroughton.

2. B. NEBULOSA, nobis, *n. s.* Like B. GRANDIS, but with the face shorter (as described), and eight cirri not quite so strongly

unnecessary coinage of new names. Thus BOTIA of Gray he terms *Diacantha*, retaining two of B. Hamilton's species which he refers to, *viz.* DARIO and GETA. His *Diacantha* is moreover erroneously stated to have "the body destitute of scales;" which again is erroneously asserted of his *Canthophrys*, to which he refers the C. GUNTEA, B. H., by the new name *vittatus*. I doubt if any Loche is scaleless. The 'circle of five' completed, of course a redistribution is necessary as often as any well-marked new form is brought to notice, and especially such very strongly characterised generic forms as will be here described.

developed. Body imperfectly banded, shewing about seven irregular transverse bands, which are double or dark only on their borders and more or less broken and confluent. Three distinct lines of spots on the dorsal, besides its dusky tip: three also on the forked caudal, besides the base and tip: five in all on the pectorals; two on the ventrals; and two (indistinct) on the anal. Colours black and gold in the recent specimen, as in the various affined species; the markings tending to assume the spotted appearance proper to *B. GRANDIS*. The fin-rays are alike in both.

*D.* 10.—*A.* 6.—*P.* 13 or 14.—*V.* 8.—*C.* 19.

Length of specimen  $5\frac{1}{2}$  in. Height of body 1 in.; at base of tail nearly  $\frac{5}{8}$  in. From Dorjiling: presented by the late Dr. Wallich.

3. *B. HISTRIONICA*, nobis, *n. s.* A species of very remarkable beauty, similar to the last in form but having the eight cirri still less developed. Only five black bands on the body, the first of which encloses the gill-covers and the third descends from base of dorsal: another crosses the forehead and eyes: another, again, passes from before each eye to the cleft of the mouth; and the medial portion of the face is also black to the muzzle. The bands of the body are broad and subregular in shape, each containing a pale round spot at the lateral line and another on the ridge of the back. Dorsal fin with one broad interrupted black band, and some black also at base. Pectorals, ventrals, and anal, each with two black bands; and the caudal also with two broad bands and a black tip to each lobe. Fin-rays as in the two preceding species; and the markings exhibit a sort of link between those of *B. NEBULOSA* and of *B. GETA* and *B. DARIO*. Length  $4\frac{1}{2}$  in. Tenasserim.

II.—*SYNCROSSUS*, nobis, *n. g.* Like *BOTIA*, but more compressed, with similar forked tail; the head much compressed, small, elongated, and tapering to the muzzle, which terminates in one flat filament that ramifies into four; two cirri only on the lower jaw: eyes placed high, but laterally; and nostrils midway between the eyes and muzzle. A forked spine anterior to the eye, of which the second prong is more developed.

1. *S. BERDMOREI*, nobis, *n. s.* (Probably *Schistura grandis* apud McClelland, from the Khásya mountains, *C. J. N. H.* II, 586.) Length  $5\frac{1}{2}$  in., by  $1\frac{1}{8}$  in. deep at dorsal fin. Eight distinct lateral

black bands, the second of which proceeds from the anterior base of the dorsal fin; as seen from above, there are three more anterior bands, and an imperfect fourth at the occiput; these on the sides are broken into numerous spots, seen also on the gill-covers, and more or less on the sides of the face. Two longitudinal dark bands on the occiput unite into one towards the muzzle. Dorsal fin with three series of black spots, more or less well defined as distinct rows, and sometimes one large black spot towards the end of the first three rays. Tail with four or five transverse rows of distinct spots, continuous as a series of bands in some specimens. Pectoral, ventral, and anal fins spotless. A dark streak from eye to muzzle.

*D.* 11.—*A.* 6.—*P.* 13.—*V.* 8.—*C.* 17.

Length  $5\frac{1}{2}$  in., of which head to gill-cover is  $1\frac{5}{16}$  in. Tenasserim provinces.

*N. B.*—The *Schistura grandis* apud McClelland, from the Khásya hills, belongs clearly to this genus, though perhaps to a second species. “The head is long, much compressed, with two strong prickles beneath each eye; mouth narrow; four short cirri suspended from a single pedicle on the snout; and two from a single pedicle at the apex of the lower jaw, and one at each corner of the mouth.

*D.* 10.—*A.* 1-7 [?]*—P.* 14.—*V.* 9.—*C.* 19.

“Body and fins covered with irregular green spots and streaks  
Habitat Káshyá mountains.”

III.—*PROSTHEACANTHUS*, nobis, *n. g.* Form greatly elongate, subcylindrical; the head much lengthened, compressed, tapering, with the eyes small, placed very high and near together, but laterally directed; moveable forked spine situate midway between the eye and muzzle, its posterior prong longer. Two minute cirri above, and below a broad lappet which tends to divide into four rudimentary cirri. Dorsal fin equidistant from the muzzle and tail-tip, its base anterior to that of the ventrals. Tail moderately furcate.

*PR. SPECTABILIS*, nobis, *n. s.* From twelve to fifteen transverse black bands on the back, and as many large black spots along the lateral line; between them an irregular longitudinal series of small spots: a row of four or five spots along the profile, and a row of smaller spots on the cheeks. One row of small spots on the rays of the dorsal fin, a large black spot towards the end of its first ray, and a terminal

series more or less distinct. Tail with one large spot towards the end of each lobe, and two or three more intermediate; also an irregular row of spots towards its base. Pectoral, ventral, and anal fins, colourless or nearly so.

*D.* 10.—*A.* 6.—*P.* 11.—*V.* 6.—*C.* 17.

A very prettily marked fish. Length 5 in., of which head to gill-cover 1 in.; and height at dorsal  $\frac{1}{2}$  in. Tenasserim provinces.

IV.—*ACANTHOPIS*, Agassiz. The ordinary spined Loches with compressed head, of which the European *A. TENIA* is typical.

Of these, some are of more elongate shape, with the dorsal fin placed somewhat backward and distinctly posterior to the ventrals; tail rounded more or less; and the head not so much compressed as in the others, with the eyes placed high, but not approximated as in *PROSTHEACANTHUS*. Such are *AC. TENIA*, (L.), and the Indian *AC. GONGOTA* and *AC. CURCURA*, (B. H.) Also

*AC. BERDMOREI*, nobis, *n. s.* Of a pale reddish clay-colour, thickly freckled over with blackish except on the abdominal region; about a dozen larger black spots along the lateral line, more or less distinct; the dorsal aspect uniformly dark or nearly so: head minutely speckled: bifurcate spine small, with subequal prongs: well developed cirri: dorsal and caudal minutely speckled throughout; the anal less so; and pectorals and ventrals dark-centred.

*D.* 8.—*A.* 6.—*P.* 8.—*V.* 6.—*C.* 17.

Length  $3\frac{1}{2}$  in., of which head  $\frac{5}{8}$  in.: depth of body  $\frac{1}{2}$  in. Tenasserim provinces.

Others have a shorter body, with the dorsal in the middle of the entire length and opposite to the ventrals; the head small and much compressed. To this division appertains *AC. GUNTEA*, (B. H.), which is the only species of Loche common about Calcutta.

*AC. MICROPOGON*, nobis, *n. s.* Head and body very much compressed, the tail furcate, and cirri minute: posterior prong of the bifurcate spine conspicuously longer and stronger. Body pale, blotched and mottled with light ashy-brown, and showing a more or less obscure series of ten transversely oval ashy spots along the lateral line, and a black one at base of tail: each tail-lobe marked with four oblique dark cross-bands, the last of them terminal: four transverse

dusky striæ on the dorsal, not well defined; the lower fins with one or more obscure dark striæ, or merely a little powdered with dusky.

*D.* 8.—*A.* 6.—*P.* 7.—*V.* 7.—*C.* 16.

Length  $2\frac{1}{2}$  in., by  $\frac{3}{8}$  in. deep at base of dorsal, and  $\frac{1}{8}$  in. across base of ventrals, the back much narrower. Tenasserim provinces.

Other forms of spined Loches will have to be discriminated; amongst which, one very distinct may be termed—

V.—PANGIO, nobis, *n. g.* Of uniform thickness, elongated, slender, with the dorsal fin placed very far backward, much nearer to the tail than to the head; the head short, much compressed between the eyes, and each nostril furnished with a short filament, additional to the six labial cirri. Anterior prong of the infra-ocular spine distinctly longer.

P. CINNAMOMEA: *Cobitis pangio*, B. H.; *C. cinnamomea*, McClelland. This has small fins and a round tail; but certain Indonesian species affined to it have a forked tail. The ventrals are well developed.

VI.—APUA, nobis, *n. g.* Much like the last, but the dorsal placed still further backward, and the ventrals *wanting altogether*. The head, and the fins, smaller than in PANGIO; the former still more compressed, and the same infra-ocular forked spine, and eight cirri (two of which are given off from the nareal apertures), but the cirri are more minute. The spines are exceedingly liable to be overlooked. Dorsal placed at the commencement of the last fourth of the entire length; the anal near the tail: all the fins being small and narrow.

A. FUSCA, nobis, *n. s.* Of three specimens of this curious fish, the largest measures  $2\frac{1}{2}$  in. long, by  $\frac{1}{4}$  in. deep, and  $\frac{1}{8}$  in. broad; head  $\frac{5}{16}$  in.: from muzzle to base of dorsal  $1\frac{3}{4}$  in. The rays of the dorsal, anal, and pectoral fins are difficult to distinguish, but appear to be

*D.* 7 or 8.—*A.* 6.—*P.* 9.—*C.* 17.

On a cursory view, the dorsal, anal, and pectoral fins might be supposed each to contain two or three rays only, these fins being remarkably narrow. Colour uniform dull brown, paler below. Tenasserim.

Had it not been for the total absence of the ventral fins, this form



might have been included in PANGIO; and very closely akin to it, again, must be the COBITIS MICROPUS, Val., from China, in which the ventral fins are minute,\*—but this would appear to have no infra-ocular spine. M. Valenciennes, however, remarks of it—“La caudale, arrondie, a deux carènes charnues sur le dos ou sur la base de la queue, qui semble augmenter la longueur de la nageoire ou simuler une sorte d’adipose.” This exactly describes what is seen in our largest specimen of APUA FUSCA; but in the others the ridge is continuous. C. MICROPUS should constitute another generic *coup*; and another again occurs in the MISGURNA, Lacépède, founded on the European (C.) FOSSILIS.† This last is akin to the first division of ACANTHOPTIS, but is still more elongated, subcylindrical, or only a little compressed laterally, and it has no infra-orbital spine, but an indication of the facial slit that conceals the spine in all the preceding. It has therefore been held to conduct to the spineless Loches, to which, for the present, I restrict—

VII.—COBITIS, L. Type C. BARBATULA of Europe. These never have the head so much compressed as in the majority of Spined Loches, and in some it is even broader than the body: the latter also tends in many of them to be subcylindrical rather than compressed. Some, however, are moderately compressed, approaching to the form of BOTIA, but more elongated; having also a large dorsal fin of many rays: such is—

C. RUBIDIPINNIS, nobis, *n. s.* A fine species,  $4\frac{3}{4}$  in. long, by  $\frac{7}{8}$  in. deep, and  $\frac{1}{2}$  in. broad; fully  $\frac{1}{4}$  in. between the eyes; from eye to muzzle  $\frac{3}{8}$  in.; and head from gill-cover  $\frac{7}{8}$  in.; the dorsal fin nearly 1 in. along its base. Six well developed cirri; and a peculiar character consists in a short broad obtuse spine-like process projecting from the middle of the upper lip: tail somewhat rounded. General colour olive-brown with a ruddy wash, paler below; the fins tinged with red; dorsal and caudal fins transversely rayed with dusky, the other fins without markings. On the dorsal are four or five rows of dark

\* He terms it “la Loche aux petites ventrales.”

† Another, again, perhaps, in certain rather elongated Loches of China, which have ten cirri; as the C. BIFURCATA and C. PECTORALIS, McClelland, and C. ANGUILLICAUDATA, Cantor, figured by Sir J. Richardson in the *Zoology of the Voyage of the Sulphur*.

spots, on the caudal ten or more transverse lines. Pectoral fins much larger than the ventrals. The rays are—

*D.* 15.—*A.* 6.—*P.* 10.—*V.* 7.—*C.* 17.

Tenasserim provinces.

Others have the body proportionally less deep; as the *C. BILTARIA*, *B. H.*;\* nearly affined to which ranks—

*C. SEMIZONATA*, nobis, *n. s.* Four well developed cirri above and two below: a minute spinelet above the muzzle (as in *C. MONOCERA*, McClelland):† tail slightly bilobate: pectorals larger than the ventrals: the dorsal consisting of sixteen rays and the anal of six. A series of twelve to fourteen dark transverse dorsal bands, occasionally forked or confluent, attenuating and curving backward as they descend till they reach the lateral line, below which is a longitudinal row of about twelve irregular blackish spots: head spotted with blackish, the spots sometimes uniting to form transverse bands on the occiput: a black spot surrounded with white at base of tail above: lower parts pale and spotless. Dorsal fin with four or five irregular rows of dark spots: caudal with seven or eight dark transverse lines. Length  $3\frac{1}{2}$  in., by more than  $\frac{1}{2}$  in. deep at base of dorsal, and above  $\frac{1}{4}$  in. broad. Tenasserim provinces.

The great mass of small spineless Loches have the head shorter anterior to the eyes, the dorsal fin with fewer rays (commonly nine or ten, or not so many), and the tail slightly furcate. The pectorals

\* To *C. BILTARIA* I refer a specimen from Másuri, having 12 rays only to the dorsal and 7 to the anal fins; the black spots on the dorsal and black transverse lines to the caudal being well defined. Length  $2\frac{3}{8}$  in. It agrees with a specimen from the Brahmaputra, excepting that the tail-markings are finer and more distinct.

Another species from Másuri, which agrees in all else with Mr. McClelland's description of *C. MONTANA*, is in every respect a typical *COBITIS*, but has *not* "a single sub-orbital spine on each side." The zones or bands on the body vary in number and breadth and in arrangement in different specimens, and the dorsal and caudal fins are more or less speckled, in some much more so than in McClelland's figure. Largest specimen  $3\frac{1}{2}$  in.

These Másuri specimens are in the private collection of Major R. C. Tytler.

† This little nasal process re-appears in *HOMOLOPTERA BILINEATA*, nobis, described in the sequel.

and ventrals are mostly nearly equal in size. This form is exemplified by those figured by Mr. McClelland in *As. Res.* XIX, II, pl. 53, figs. 1, 3, 4, 5, and 6, and also by the two Kashmirian species figured by Heckel. To it appertain—

C. ZONALTERNANS, nobis, *n. s.* Largest specimen  $1\frac{5}{8}$  in. long, with ten dorsal and six anal rays. It has a dark lateral streak, crossed by twelve short transverse bands, which alternate with about the same number of dorsal dark cross-bands. The dorsal fin is marked with three and the caudal with four rows of black spots: the other fins being spotless. Tenasserim provinces.

C. CINCTICAUDA, nobis, *n. s.* Very like C. SCATURIGINEA, B. H., but with fewer rays to the dorsal and anal (*viz.* seven and six respectively), and the body more regularly banded; shewing about ten dorsal transverse bands which are broader than the alternating yellowish bands, and a strongly marked black transverse bar at base of tail,—also a dark bar between the eyes and mouth, crossing the muzzle. Two black spots on base of dorsal, and above them a black speck on each ray; the other fins without markings. Length 2 in. Tenasserim Provinces.

VIII.—HOMOLOPTERA, Kuhl and von H. asselt. A form intermediate to the ordinary spineless Loches and BALITORA of Gray.

H. BILINEATA, nobis, *n. s.* Affined to H. ERYTHORRHINA, (figured as *Balitora erythrorrhina* by M. Valenciennes,) but with the BALITORA tendencies less decided. A minute blunt knob on the muzzle, as in certain species of restricted COBITIS. Nine dorsal and six anal rays; the tail acutely furcate. A narrow dark line from muzzle to eye, continued behind the eye as a broad, irregular, and somewhat zigzag band, set off laterally with whitish, and joining its opposite behind the dorsal fin: a corresponding but obscure band below the lateral line, little seen on the hind-half of the body. Dorsal with a large blotch of black and one small posterior spot. Caudal fin also black, with the sides of its base and the forking tips white (or yellow?), but the extreme tips black. Pectorals, ventrals, and anal, blotched with black: sides of body somewhat nigrescent. Largest specimen  $2\frac{3}{4}$  in. long. Tenasserim provinces.

Fam. *Clupeadæ.*

CHATLESSUS MANMINA; *Clupanodon manmina*, B. H. Tenasserim provinces.

Fam. *Anguillidæ*.

ANGUILLA ARRACANA, McClelland. Young, 7 in. long. Tenasserim.

Fam. *Symbranchidæ*.

AMPHIPNOUS CUCHIA, (B. H.). Tenasserim. Mr. Theobald.

Fam. *Hippocampidæ*.

HIPPOCAMPUS MANNULUS, Cantor. Tenasserim, Mr. O'Reilly. Also Port Blair.

Fam. *Tetrodontidæ*.

LEIOSOMUS CUTCUTIA; *Tetraodon cutcutia*, B. H.: *L. marmoratus*, Swainson. Procured at Maulmein by Mr. Theobald, *J. A. S.* XXIV, 712. Type of *Monotreton*, Bibron.

GASTROPHYSUS LUNARIS; *T. lunaris*, Cuv.: *T. tepa*, B. H.; *T. leiopleura*, Gray, et *T. spadiceus*, Richardson, apud Bleeker. Tenasserim.

AROTHRON SIMULANS, Cantor: *T. fluviatilis* apud nos, *J. A. S.* XXIV, 712. Procured at Maulmein by Mr. Theobald.

CHONERHINOS NARITUS (?); *T. naritus* (?), Richardson. Some small specimens, procured at Amherst by E. O'Reilly, Esq., accord with Dr. Cantor's description (*J. A. S.* XVIII, 1365), except in having no dark markings on the dorsal, anal and caudal fins. Perhaps, therefore, an affined species rather than the same.

Five species of this family are commonly procurable in the Calcutta fish-bazars; but I have never been able to obtain the *T. FLUVIATILIS*, B. H., which is a *GASTROPHYSUS* of J. Müller.\* One approximating it in appearance, like the *A. SIMULANS*, may be designated.

*AROTHRON DORSOVITTATUS*, nobis, *n. s.* Attains to 8 in. long. The spines much larger and more sparsely inserted than usual; a series of about twelve only occurring on the dorsal region, from one pectoral fin to the other. Caudal region, from some distance anterior to the dorsal and anal fins, quite free from spines. Head exceeding one-fourth of the total length. Lateral line indistinct.

\* Type of *Dichotomycteris*, Bibron, *Rev. et Mag. de Zool.* 1855, p. 279, which I have not now to refer to.

*D. 15.—A. 13.—P. 21.—C. 12.*

Colour dusky yellowish-green, with usually three distinct pale bands crossing the dorsal aspect, anterior to the dorsal fin; the first passes from eye to eye, terminating near the hind-part of the orbits; the second passes in a curve from before the pectorals, and is sometimes double; and the third occasionally reaches back as far as the dorsal fin, but is generally a little in advance of it; the interspaces of those pale bands being infuscated and undivided, but posterior to the third of them the alternating dusky bands are broken into roundish spots of various sizes, much as in *GASTROPHYSUS FLUVIATILIS* (as figured by Buchanan Hamilton), only the spots run generally smaller; but there are no bars on the caudal fin, though occasionally it is much infuscated, together with the entire lower-parts. A common species.

*GASTROPHYSUS MICROPHALMOS*, nobis, *n. s.* Still commoner than the last, but hitherto overlooked from its general resemblance to *G. PATOCA*, (B. H.) It has, however, a conspicuously smaller eye, a considerable development of spinelets both anterior and posterior to the pectorals (whereas *G. PATOCA* has generally the sides quite smooth, or at most and rarely a very few spinelets at that part), and the nareal apertures have no distinct appendage (whereas in *G. PATOCA* they have a considerable membranous appendage both before and behind, approximating this particular species to *AROTHEON*). Again, the pale spots of the upper-parts are generally smaller and more numerous, also more angular, and they mostly form a series of transverse stripes on the sides. Head exceeding two-fifths of the total length: the fimbriation of the lips internally much developed. Dorsal and anal fins rather falcate; the caudal square.

*D. 13.—A. 11 or 12.—P. 16.—C. 12.*

Colour dark olive-green on the upper-parts, studded with numerous greenish-silvery spots and transverse stripes, the latter prevailing on the sides: medial third of body spotless golden; the belly white; and the fins more or less tinged with bright yellow. Irides orange. Equally common with *G. PATOCA*, and attains to as large a size, or to about 18 in. in length.

Our three other species, obtainable in the Calcutta fish-bazars, are *LEIOSOMUS CUTCUTIA*, *GASTROPHYSUS LUNARIS*, and *G. PATOCA*, (B. H.)